

MARSHALL, O'TOOLE, GERSTEIN, MURPHY & BORUN

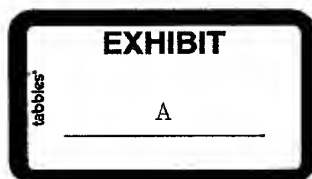
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December 27, 2000

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VIA FEDERAL EXPRESS

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Mathew A. Yeakey, Esq.  
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Re: Stephen Johnson's Reissue Declaration for Angular Orientation  
Control System for Friction Welding Reissue Application  
Our Case No.: 29627/36393

Dear Mr. Yeakey,

Pursuant to the conversation between you and David Read, enclosed is a reissue declaration for execution by Stephen Johnson. As previously discussed, due to the litigation between our respective clients, the reissue declaration is appropriately sent to you on behalf of Stephen Johnson. I have also enclosed copies of the issued patent, U.S. Pat. No. 5,858,142, for Mr. Johnson's review.

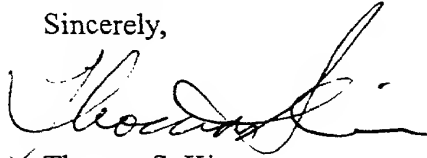
As you and Mr. Read discussed, we are in the process of filing a broadening reissue application related to the above identified U.S. patent; the nature of the changes made therein are spelled out in more detail in the enclosed reissue declaration.

Mathew A. Yeakey, Esq.  
December 27, 2000  
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Please realize that the reissue application must be filed by January 12, 2001.  
Accordingly, please have Mr. Johnson execute the enclosed reissue declaration and return to me by January 8, 2001.

Feel free to call me in the interim if you have any questions.

Sincerely,



Thomas S. Kim

TSK/kmm  
Enclosures

cc: David C. Read (w/o encls.)

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MAR 1 1991  
MARSHALL, O'TOOLE, GERSTEIN, MURRAY & BORUN

# APPENDIX

```

rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved
rem
rem
rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved
rem
rem *** #MAIN
rem: This is the main program task
#MAIN
JS #INIT
XQ #IDLE,1
#MAIN1
JS #CYCLE,@IN[1]-0,
JS #HOME,HPB=1
JS #WF1 D1 RPB=1,
JP #MAIN1
EN
rem: End #MAIN*****
rem: *** Inertia Friction Welding Inc
rem: *** Copyright 1996
rem: *** All rights reserved
rem:
rem: *** #HOME
rem: Home function
#HOME
HX ..
HPB=0,
MG "HOME"
XYHomed=0,
HomeIP=1,
Revl.S=0; Forl.S=0,
ER HomeFE,
AC HomeAcc,
DC HomeDec,
KP HomeF,
KI HomeI,
KD HomeD,
IL 2,VT 1,
#HOMFX
MG "Homing .."

```

# APPENDIX-continued

```

StatMsg="HOMEX;"
rem Make sure of home switch
MG "Get off 'home switch . . .";
JG F1Vel,BUX;
#WFX2:JP #WFX2,@IN[2]-0;
WT 500
STX.AMX,JP #HOMEX,@IN[2]-0;
MG "Off Home switch . . .";
rem Find home LS
MG "Looking for home switch . . .";
#WFX1;
PR -5,H; AMX;
JP #WFX1,@IN[2]-1,XPos= TPX;
MG "Home switch found . . .";
rem;
rem Go back to home position
SP F1Vel
PA XPos,BG:AM:DP0;
MG "Slides Homed . . .";
#HOME1
XYHomed=1;
XQ #IDLE;
EN
rem End #HOME*****
rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved
rem;
rem *** #POSERR
rem Position following error
#POSERR
ZS;
JS #HALT;
MG "FOLLOWING ERROR"
StatMsg="FOLERR"
ZS,JP #MAIN;
RF
rem End #POSERR *****
rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved
rem;
rem *** #HALT
rem Brings motion to a stop
#HALT
StatMsg="HALT"
ER*=1000;H 0,AB 1:WT 1000;
SH,CS,HX 1,MO;
OP255;
rem JS #CLEARIO;
MG "Servo program halted . . .";
EN
rem end #HALT *****
rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved
rem;
#IDLE
IdleTM=TIME
#IDLE1
JP #IDLE1,TIME-IdleTM<1000
ITime=TIME+1;
MG "Servo Ready . . .",ITime{F6}
JP #IDLE;
EN
rem End #IDLE *****
rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved
rem;
#INIT
SB 1,SB 2,SB 3 SB 4;
SB 5,SB 6,SB 7,SB 8;
ER*=1000;
OE*=1;
TL 1;
GN 1;
AC 500;
DC 500;

```

# APPENDIX-continued

```

KP .2;
KI .C5;
KD 0;
HPB=0;
RPB=0;
XYHomed=0;
IdleTM=0;
ITime=0;
JS #INITGL
JS #INITWL
EN;
rem End #INI *****
rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved.
rem
#WELD1
HX :
RPB=0;
MG "Weld Cycle Started"
ER*=WeldFE;
OE*=1;
rem
TL WeldTL;
GN WeldGN;
SP WeldSP;
AC WeldAC;
DC WeldDC;
KP WeldKP;
KI WeldKI;
KD WeldKD;
Dist=PPR*WeldRev;
Dist2=Dist-(PPR*TngRev);
PR Dist;
TW SOC;
BGX;
MG "Scrub"
rem Scrub start
AT 0;
AT ScrubTM;
rem Burn start
CB1;
MG "Burn . . ."
AD Dist2;
rem WTS00
rem Forge Start
CB 2;
SB 1;
MG "Forge . . ."
AMX;
KP WeldKP2;
WT ForgeTM;
SB 2
MG "Weld complete"
WT 10C00
KP WeldKP
EN;
rem End #WELD1 *****
rem
#CYCLE
JS #HOME,XYHomed=0;
JS #WELD1;
XO #IDLE;
EN
rem End #CYCLE *****
#MCTIME
MG "Position timecut "
RE
rem End WELD CYCLE MODULE *****
rem
#INITGL
rem
rem GLOBAL VARIABLES
rem
rem
rem PULSES PER INCH
PPI=1000.000000
rem PULSES PPR REV
PPR=7941.22449

```

# APPENDIX-continued

```

rem Timer Ticks Per Second
TPS=1000
rem Input Volts Per Unit
IVtPRPM=2.000000
IVtPPSI=3.000000
rem Output Volts Per Unit
OVtPRPM=2.000000
OVtPPSI=3.000000
rem Sample Rate
SampleRt=100
rem Number of IO
rem Homing following error counts
HomeFE=2000;
HomeVel=1000;
HomeAcc=500;
HomeDec=500;
HomeP=.8;
HomeI=.02;
HomeD=.2;
GHomeVel=1000;
FTVel=1000;
rem Software limits
XFLimit=11.000
YFLimit=11.000
XBLimit=-0.100
YBLimit=-0.100
InvertIO=1
rem Max Move Values
MaxXMVel=10
MaxXMAcc=40
MaxXMDec=40
EN
rem
rem Weld start values
#INITWL
rem *** Inertia Friction Welding Inc
rem *** Copyright 1996
rem *** All rights reserved
rem
rem Weld specific params
WeldRPM=1750
ScrubTM=2000;
ForgeTM=4000;
WeldRevS=10
Degrees=1
TngRev=0.5
rem
rem PID params
WeldAcc=100
WeldDec=100
WeldKP=0.5
WeldKP2=1
WeldKI=0.02
WeldKD=.60
WeldFErr=1.5
WeldTL=9.9988
WeldGN=20
rem
rem Calculated parameters
WeldRev=(Degrees/360)*WeldRevS;
WeldSP=(WeldRPM*PPR)/60;
WeldAC=(WeldAcc*PPR)/60;
WeldDC=(WeldDec*PPR)/60;
WeldFE=WeldFErr*PPR;
rem
rem End weld.txt *****
EN
rem End #INITWL *****

```